

ONE-STAGE RECONSTRUCTION OF PHARYNX AND CERVICAL ESOPHAGUS WITH CHEST FLAP*

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CANCERS of the hypopharynx, laryngopharynx, and cervical esophagus present a complexity in management with a high incidence of failure in local control, a high incidence of metastasis to the cervical region, and a combination of circumstances that affect the mechanisms of swallowing, breathing, and speaking. This formidable array of factors interferes with the efficient surgical management of the cancer.

The use of neck flaps for the reconstruction of the gullet, as advocated by Wookey,⁵ is a well-controlled local technique for the repair of limited excisions of the hypopharynx. This technique is not applicable to extensive pharyngeal lesions, to lesions in the region of the cervical esophagus, to lesions that present with metastasis to the cervical region, and to lesions in the skin of the neck caused by heavy radiation.

In 1960 I published a report on the use of the anterior superior horizontal chest flap as particularly adaptable to deficiencies in the lower part of the lateral and central neck.⁴ In 1962 P.M. Barretto developed a cervicoacromial flap for deficiencies of the pharynx and cervical esophagus.^{2, 3} This was a three-stage technique.

The use of the anterior superior horizontal chest flap for reconstruction of the gullet was reported in 1965¹ by Bakamjian, whose ingenious application of this flap reconstituted the swallowing mechanism in a two-stage procedure. This paper deals with a modification of that technique into a one-stage procedure and with the incorporation of a new type of flap called the anterior superior oblique chest flap into a one-stage procedure as well.

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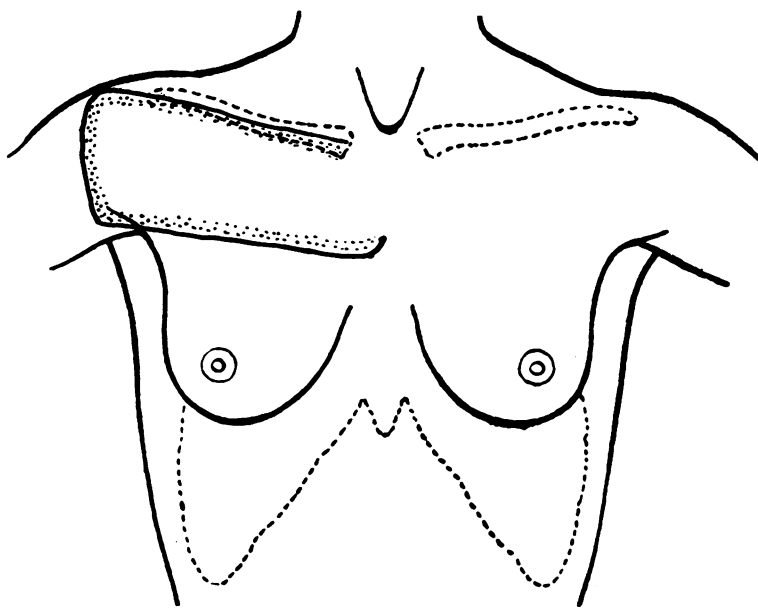


Fig. 1. Outline of anterior superior horizontal chest flap that measures 8 to 9 cm. by 16 to 20 cm.

The hazards attendant on attempts to reconstruct a new gullet have stimulated an evolutionary series of surgical endeavors. Several decades ago distant-tubed pedicle flaps were used, followed by the use of regional neck flaps. More recently there have been transpositions of the gastric and bowel segments for use as laryngotracheal transplants. These developments have also included the free transplantation of bowel segments with precise arterial and venous anastomoses. Full-thickness free skin grafts of the penile shaft skin and split-thickness skin grafts held in position with a stent have had a place in this reconstruction. The use of regional chest flaps, discussed here, has been found to be useful and secure.

The use of radiation for cancer of the gullet has great appeal in that the essential functions of breathing, speaking, and swallowing are not seriously disturbed. When radiation controls the cancer, nothing matches it in excellence; however, it is indeed disappointing that this does not occur more frequently. Any surgical interference in these situations drastically alters the basic physiologic functions in the attempt to produce a small but definite increase in the cure rate.



Fig. 2. Anterior superior horizontal chest flap tubed and transposed into pharynx and cervical esophagus.

The combination of radiation and ablative surgery may add to the cure rate, but the dosage factors, time factors, and the capacity of the patient's tolerance of this combined treatment will have to be evaluated.

THE CHEST FLAP IN THE ONE-STAGE RECONSTRUCTION OF THE CERVICAL ESOPHAGUS

Indications. The large cancers of the pharynx, pyriform fossa, post-cricoid, cervical esophagus, and laryngopharynx which are located in the periphery of the gullet may be managed by the use of the chest flap in a one-stage procedure for the reconstruction of the gullet. Certain severe cases of atresia and stenosis of the mesopharynx, hypopharynx, and cervical esophagus that follow the ingestion of caustics

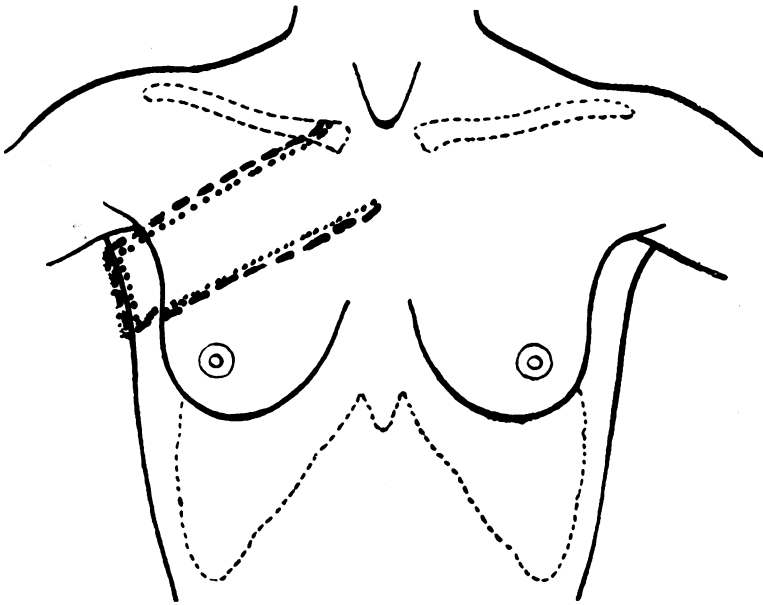


Fig. 3. Outline of anterior superior oblique chest flap using the skin underneath the axilla.

may also be treated by this technique.

Technique. The ablative technique involves a general resection of all involved structures with ample margins, as well as the immediate regional lymphatic depots and adjacent organs. The surgical specimen usually includes the primary tumor, a portion of the trachea, the thyroid and parathyroid glands, and the lymph nodes in the tracheoesophageal sulcus. If unilateral or bilateral metastasis to the cervical region is present, a radical neck dissection is included in the ablation. If the primary cancer is bilateral and there is no gross metastasis to the cervical region, an elective radical neck dissection is not done at this time.

Aside from the difficulties and intricacies of the technique itself, the surgeon is confronted with further impediments. The stout, short-necked patient may present some slight technical difficulties to flap adjustment. Also, an amputation of the cervical esophagus well below the clavicle in a thick-chested individual creates a cumbersome or almost impossible situation in the suturing of the flap to the esophageal stump.

There is never any difficulty encountered in the superior portion

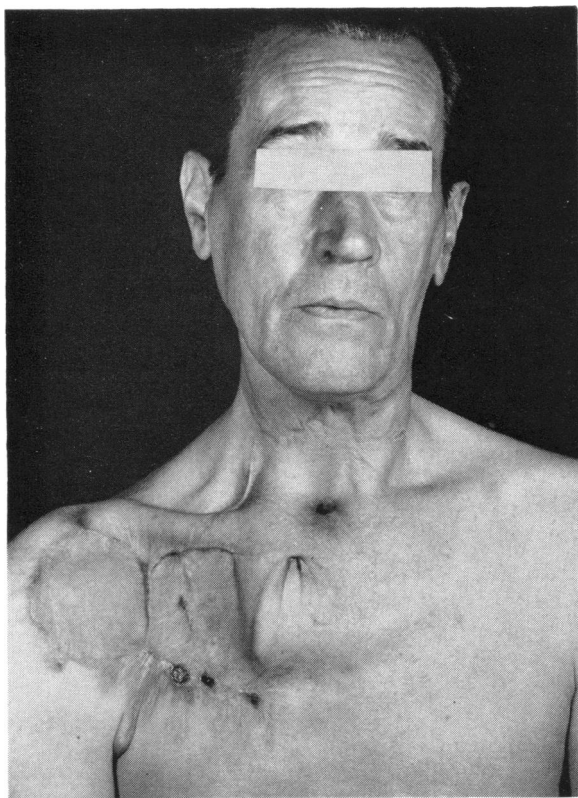


Fig. 4.—One-stage reconstruction of hypopharynx and cervical esophagus with anterior superior horizontal chest flap and epithelial shave.

of the wound, as these chest flaps will reach to the level of the uvula with ease.

The anterior superior horizontal chest flap usually measures 8 cm. by 18 cm. (Figure 1). It is planned horizontally, just beneath the clavicle, and has an exceptionally rich blood supply from the perforating branches of the internal mammary arteries. This skin pedicle is transposed 90 degrees to a vertical position, is sutured to the mesopharynx, and is then tubed. As the tubing approaches the stump of the cervical esophagus, a side-to-end approximation is accomplished by dropping the pedicle down to the level of the esophagus (Figure 2). This requires that there be some laxity in the tube. The stoma should be cut obliquely to facilitate the anastomosis with the tube and to create an adequate aperture for the passage of food. This flap cannot be used if the chest is thick and the stoma is low.

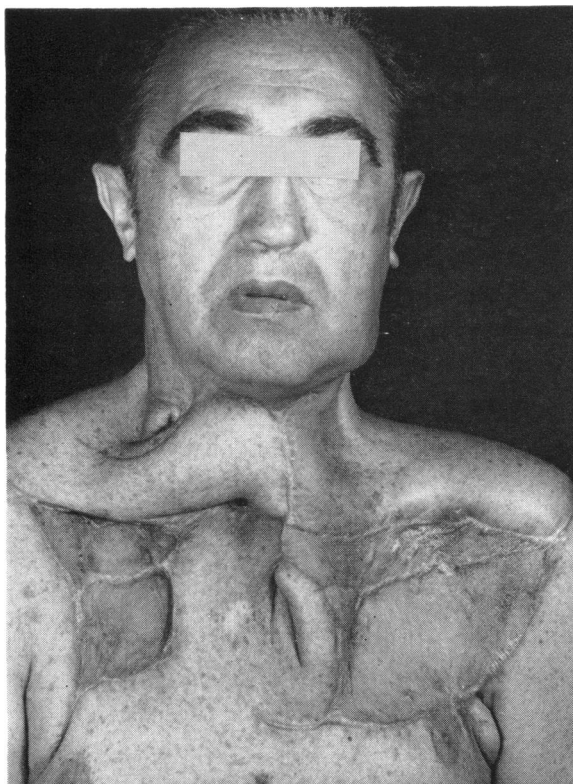


Fig. 5. One stage reconstruction of hypopharynx with anterior superior horizontal chest flap, and neck resurfacing with lateral anterior chest flap.

The anterior superior oblique chest flap also measures 8 cm. by 18 cm. (Figure 3). This flap is planned obliquely and extends into the lateral chest underneath the axilla. The surgical procedures are similar.

An epithelial shave, 2 cm. wide, is performed across the pedicle tube just below the esophageal anastomosis. After the epidermal layer has been separated from the dermis, these raw surfaces are approximated with interrupted No. 000 chromic catgut sutures in a superior and then inferior plane. This converts the entire reconstruction of the gullet into a one-stage procedure. The healing of the epidermal shave is in the form of a race between the production of a fibroblastic scar and the regeneration of the epidermis. A small superior and inferior cul-de-sac is created, but this is of no consequence. Occasionally there may be a small leak at the suture line, but this closes spontaneously. The new gullet is completely competent (Figures 4 and 5).

The donor area on the chest is dressed with a free split-thickness skin graft.

If the trachea has been resected at a low level it may be necessary to employ an additional chest flap to accommodate the deep position of the tracheostome.

The original planning of the incisions in the neck must accommodate to the entrance of the transposed chest flap. This is accomplished by a vertical skin incision made at the junction of the middle and internal portions of the clavicle. This incision ascends to the level of the hyoid bone and then passes medially to the opposite side. If a lateral neck dissection is to be included, it is extended to the tip of the mastoid.

To avoid incompleteness, mention must be made of two other regional flaps which are available for reconstruction of the gullet even though both of these are two-stage procedures. One is a cervical flap, modified after the original Wookey incisions, with an inferior extension approximately 6 cm. below the clavicle in order to accommodate any extension into the cervical esophagus. The second is the anterior chest flap, usually measuring 11 cm. by 22 cm. and based laterally over the deltoacromial area. This flap enters the region of the gullet from a lateral position in the neck. The tip is rolled on itself and the width of the flap (11 cm.) becomes the length of the reconstructed gullet. A medial neck flap covers this roll and a lateral pharygostome is created automatically. An epithelial shave is not indicated in these techniques.

SUMMARY

A modification of the technique for reconstruction of the gullet by the use of an anterior-superior chest flap is described. An epithelial shave 2 cm. wide is performed between the base of the flap and the esophageal anastomosis, and is accomplished in a one-stage procedure.

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